

HISTORY OF TECHNICAL DRAWINGS

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Abstract

The science that studies the laws of beauty and artistic creativity, in relation to objects of technical form, is called technical aesthetics. One of the elements of technical aesthetics can be considered technical drawing. People have used technical drawing for a long time and in a variety of its forms. Most often, technical drawing is used when creating new objects. A new idea that is being born in a person's mind, an unexpectedly new image of an object that has arisen, require immediate fixation, and the simplest, most convenient and fastest form of fixation of creative thought turns out to be drawing.

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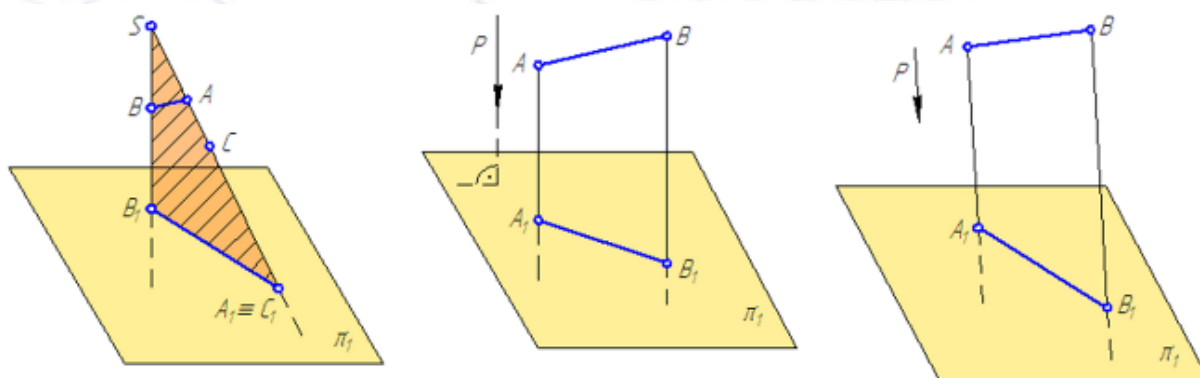
The technical drawing allows you to immediately see the advantage of new structural improvements and gives grounds to proceed with the conversion or replacement of individual parts of the machine. The solution of design tasks is greatly facilitated by the preliminary execution of sketches, technical drawings.

Several of these pre-made images allow you to choose the best option for the future shape or design of the object. But the main advantage of a technical drawing is that it forces the author to go further, make additions and corrections to his drawing, activates and improves his creative thought. And this, in turn, forces the designer to move on to new drawings until the author approaches the ideal. Designers use drawings both perspective and constructed in axonometric projections. More often, the designer's activity is limited to changing only the appearance of the object — finding more work-friendly and aesthetically beautiful forms.

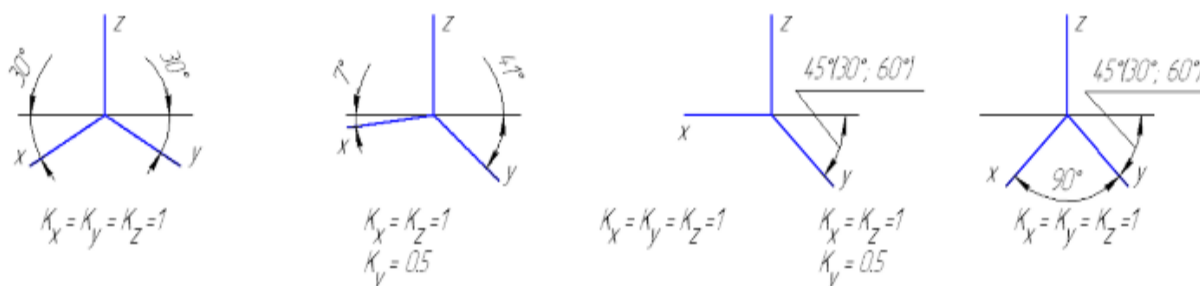


Leonardo da Vinci's Crossbow

Any object can be represented as a collection of the simplest geometric objects. As a geometric object can be: a point, a line, a surface, a body. The image of an object on a plane is called its projection onto this plane (the plane of projections), and the process of obtaining projections is called projection.



A parallel projection on one axonometric plane (projection plane) of coordinate axes and an object fixed relative to these axes is called an axonometric projection of the object. Objects are projected (with some exceptions) with a distortion of the actual size. The ratio of the image dimensions to the actual dimensions measured along the coordinate axis is called the distortion coefficient along the axis (K_x , K_y , K_z).



There are no perspective distortions in axonometric projections, as a result of which the image turns out to be conditional and simple. The shape of the object can be built exactly in size (if necessary) and depict it "not as I see it, but as it should be", with an understanding of the objective essence of the object. This is the peculiarity of the technical drawing and the simplicity of its execution, allowing you to acquire the necessary skills relatively quickly.

The ability to perform technical drawings does not require natural abilities, but is acquired by persistent systematic exercises. Technique is a set of skill techniques used in some business: musical technique, chess game technique, etc. Therefore, the person performing the drawing must have a certain technique of execution. In carrying out a straight line, not only the hand should participate, but also the whole hand: this makes it possible, with a rectilinear movement of the hand, to maintain the straightness of the segment.

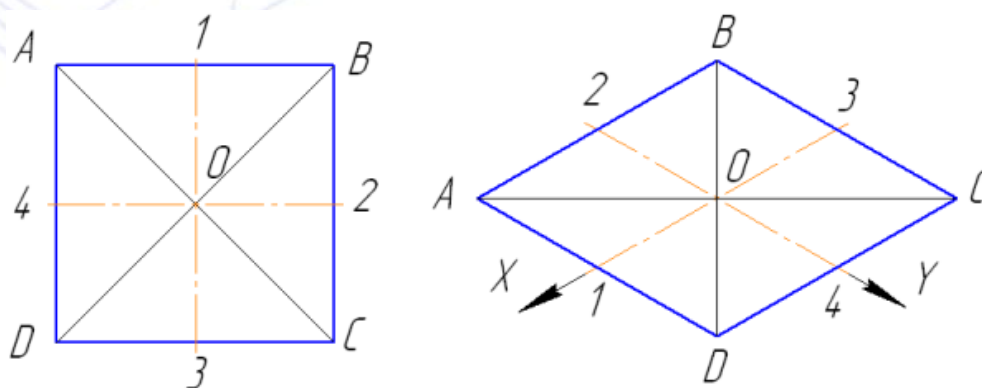
The initial strokes should not be erased by mistake with an elastic band, but it is necessary to correct the unsuccessfully drawn line with new strokes only in places where it is incorrect. Horizontal and vertical directions should be checked more often relative to the corresponding edges of the sheet of paper. It is more convenient to draw all vertical lines from top to bottom, and horizontal lines from left to right.

With insufficient experience in drawing or sketching, difficulties arise when postponing identical segments. In such cases, the use of the so-called "paper ruler" helps. On a small piece of paper, they outline the desired length of the segment and postpone it the required number of times in any directions. It is often not recommended to resort to this method, as it delays the development of the eye.

Let's construct a drawing of the square ABCD in a rectangular isometry, provided that the side AB is parallel to the X axis, and the side AD is parallel to the Y axis, the square will be depicted as a rhombus ABCD.

First draw the axes of the rectangular isometry X and Y.

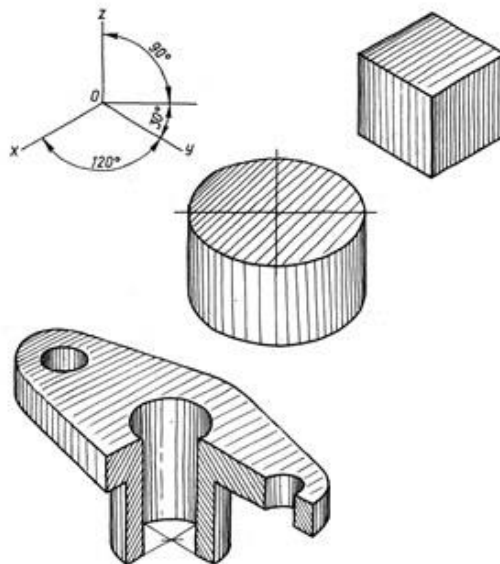
Set aside the segments (O1) and (O3) equal to half of the side of the square along the X axis from point O. Let's set aside the segments (O2) and (O4) along the Y axis from the point O, which are also equal to half of the side of the square (since in isometry the distortion coefficients on all axes are equal to one). We will draw straight lines parallel to the Y axis through points 1 and 3, and straight lines parallel to the X axis through points 2 and 4. At the intersection of these lines we get the vertices of the parallelogram of the ABCD.



In a realistic drawing, three-dimensional objects of the surrounding reality are depicted as they exist in nature and as the eye perceives them from this point of view. In the process of drawing from nature, it is very important to be able to notice the main and characteristic things and phenomena around us. In order to correctly convey the shape of an object on the plane of the sheet, you need to learn how to determine its proportions, you need to understand its design, master the techniques of drawing. Proportions are the ratio of the magnitudes of the parts of an object to each other and its parts to the whole. The more precisely the proportions of the objects in the drawing are determined, the more similarity the image has with nature.

When arranging a drawing, that is, placing an image on a sheet, it must be remembered that the observer, the viewer, looking at the image, subconsciously includes some part of the space around the depicted objects in

the image field. Hence, if we looked at the detail as if from above, then we need to leave a little more space in the upper part of the sheet ("more sky"). When looking at the detail, as if from below, the image is shifted up the sheet, leaving more "ground". If the main part of the detail (in terms of content) is on the left, then the image on the sheet should be shifted slightly to the right so that the frame does not distract attention and does not interfere with the perception of the image.



Composition is one of the main means of creating aesthetic qualities of the image, it is directly related to the visibility and readability of the drawing. Therefore, in addition to these features for the drawing, it is very important to choose an axonometric projection that most fully reveals the shape of the object.

Literatures:

1. Boltaev Otabek Tashmuxammatovich, Akhmedova Firuza Anvarovna, Jabbarov Anvar Egamovich. ON THE LINES CONNECTING THE RAILWAY TO THE CONTACT NETWORK, THE INDUCED VOLTAGE CAN BE OBTAINED USING A COMPUTER PROGRAM. CENTRAL ASIAN JOURNAL OF MATHEMATICAL THEORY AND COMPUTER SCIENCES. Volume: 04 Issue: 10 Oct 2023 ISSN: 2660-5309 <https://cajmtcs.centralasianstudies.org/index.php/CAJMTCS/article/view/531>
2. Mamurov, Islom; Jabbarov, Anvar Egamovich; Barotov, Ashurali Ixtiyor ugli. Many Sciences are Studied and Explained with the Help of Drawings. American Journal of Science and Learning for Development. Vol 2. №4 (2023). ISSN 2835-2157. <https://inter-publishing.com/index.php/AJSLD/article/view/1437>
3. Mamurov Islam, Jabbarov Anvar Egamovich, Xodjayeva Nodira Sharifovna. Spatial Imagination in the Independent Education of Students. Nexus: Journal of Innovative Studies of Engineering Science (JISES) Volume: 02 Issue: 03| 2023 ISSN: 2751-7578 <https://innosci.org/JISES/article/view/1062/919>
4. Mamurov, Islom; Jabbarov, Anvar Egamovich. DESCRIBE CIRCUITS IN COMPUTER GRAPHICS. Modern Journal of Social Sciences and Humanities (<https://mjssh.academicjournal.io/index.php/mjssh/index>). (<https://mjssh.academicjournal.io/index.php/mjssh/index>) Vol 3(2022) ISSN 2795-4846 <https://mjssh.academicjournal.io/index.php/mjssh/article/view/51>